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ABSTRACT

The higher education environment is undergoing significant change as it enters a global knowledge-based economy. Technology now enables students to undertake studies that are time and place independent. To thrive in a networked learner environment, new strategic relationships must be created between library and information professionals, information and education technologists, trainers and staff developers, instructional designers and media designers and producers. The University of Newcastle sought strategic advantage through integrating its information, education and technology services in early 1997. This paper explores the rationale for the formation of the division and the strengths and weaknesses of this approach as highlighted through a recent external review. Contains 11 endnotes. (Author/AEF)

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Integrating Information, Education and Technology Services

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The higher education environment is undergoing significant change as we enter a global knowledge-based economy. Technology now enables students to undertake studies which are time and place independent. To thrive in a networked learner environment we must create new strategic relationships between library and information professionals, information and education technologists, trainers and staff developers, instructional designers and media designers and producers. The University of Newcastle sought strategic advantage through integrating its information, education and technology services in early 1997. This paper explores the rationale for the formation of the Division and the strengths and weaknesses of this approach as highlighted through our recent external review.

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Introduction

"The universities of the world have entered a time of disquieting turmoil that has no end in sight."[i] Throughout the world the higher education environment is undergoing transformational change in response to the globalization of the economy, emergence of the postindustrial economy, the decline of the welfare state, the commodification of knowledge and technological advances which enable unprecedented innovation[ii]. Information technology is providing new learning opportunities which transcend boundaries of space, place and time enabling global competition, not only from other universities throughout the world, but from non-traditional competitors. At the same time our students', the employers' and government's expectations of service and demand for quality are increasing. Universities can no longer assume they have an exclusive franchise on enrolment of students from a particular geographic area nor can they ignore the opportunities for change in pedagogical method offered by technology. Whilst it is unclear which mode or modes of learning will dominate in the future any university which is not preparing for change and exploring options will risk creeping obsolescence[iii]. Richard Katz[iv] similarly notes that "institutions that can step up to transformational change will stand a better chance of surviving".

Mark Luker, Vice President of EDUCAUSE, noted that "The fact that our [universities] primary stock-in-trade is knowledge suggest that embracing the new tools of networked information technology should dramatically transform and improve our effectiveness as an industry. At the same time, however, we know that this can occur only after we make substantial changes to the design and operation of longtime structures and methods. In other words, we know we must transform higher education."[v] In 1996 Professor John Hay[vi], a prominent Australian Vice-Chancellor, urged universities to recognize the problems caused through 'fractionating' their budgets along traditional structural lines and, more importantly, noted the tyranny of regarding the library and information technology infrastructure as 'extra' to the academic process rather than integral components of this process.

Whilst the synergies between libraries and information technology divisions have been well recognized it has only been more recently, with the spread of the Internet and multimedia capability, that the need for close integration between the teaching and learning process and the information and information technology infrastructure has been noted.

The University of Newcastle is a comprehensive, research intensive, public Australian university. It is situated just north of Sydney on the east coast of Australia and is considered middle-sized by Australian standards with just under 20,000 students. Ranked in the top ten research income earning universities within Australia, and with a predominantly on-campus undergraduate and post graduate research student population, it exhibited a culture much like that of an Australian 'sandstone university', or what Americans would call the 'Ivy league'. It had been slow to respond, perhaps even resistant, to the challenges being raised through the impact of technological change. But in 1997 this was to change as the University sought to strategically position itself 'ahead of the game' in higher education through organizational change which integrated its information, education and technology services. This paper explores this process of change, examines how far we have progressed - the extent to which we have realized the benefits anticipated, and if not why not, and the strengths, weaknesses and lessons learned from such an integrated approach.

The Context

In 1996 the Vice Chancellor and President, who was relatively new to the institution, indicated that he was interested in structural change integrating library and information technology services, as he had positive experiences from such structures elsewhere. Change was being foreshadowed.

Barrett[vii] suggests several ways in which you can respond to change ranging from 'coping with change to survive' through to 'creating change to triumph'. The University Librarian, the Director of the Centre of Learning and Teaching and the Director, Information Technology at the University of Newcastle decided to adopt Barrett's last strategy: 'to create change to triumph', so we set about developing a discussion paper and recommendations for the Vice

Chancellor and his executive. We described the environment in which the University would operate over the next five years as characterized by:

- 'competition in a global knowledge economy, with non traditional competitors entering the market
- increasing reliance on non-government sources of income
- reduced regulation within the Australian higher education sector
- an increasing requirement to produce, deliver and distribute information without constraints of time or distance
- changing work places requiring transferable skills
- continuing development and increasing pervasiveness of information and communication technologies which will transform teaching and learning
- an expectation of continuous quality improvement based on monitoring and evaluation followed by reappraisal of plans and services
- a necessity to develop partnerships and strategic alliances in order to thrive in a changing environment
- an emphasis on 'learning' rather than 'teaching' and the student as the 'customer'
- many opportunities for universities to augment their income through universal access to their expertise.'[viii]

We noted that the tertiary education environment was undergoing significant change as technology enabled students to undertake studies which are time and place independent. We were moving into a highly competitive global knowledge economy where information technology is a strategic differentiator and where our students increasingly expect high quality, flexible information and education services without the constraints of time or distance. To strategically respond to these changes and position the university for a networked learner future we argued that we must put in place appropriate plans, policies, strategies, structures and culture. We needed to create new strategic relationships between library and information professionals, information and education technologists, trainers and staff developers, instructional designers and media designers and producers if we were to thrive in a networked learner environment.

We recommended that a new Division be formed to bring together the University Libraries, the Centre for the Advancement of Learning and Teaching, the Information Technology Division, the Medical Communication Unit and Classroom and Theatre Services. We believed that the formation of the Division would maximize the following benefits:

- 'provide an integrated approach to developing goals and plans for the delivery of flexible learning, information and technology services
- position the University to exploit information technology to strategic advantage to offer more flexible courses, regionally, nationally and internationally and to re-package modules as fee-based programs
- provide the framework from which to pursue new opportunities by bringing together staff with the relevant skills and knowledge - curriculum designers, information professionals and information technology professionals
- ensure budget flexibility to redeploy resources where most needed to achieve the University's goals and plans
- provide opportunities to re-skill staff as technology transforms their work
- provide opportunities for research to be undertaken into the application of technology in the teaching, learning, research and administrative processes with a division which combines academics and information and technology professionals
- ensure better access to the necessary infrastructure to support teaching and learning

- provide strong academic links into the faculties, ensuring the division is academically focussed and responsive

- minimize the risk of duplication of effort and resources, leading to efficiency gains."[18]

The Information and Education Services Division

The formation of the Division was endorsed by the University Council in April 1997. This was seen as an innovative response to the context in which the University must operate. The Division underwent a change management process to develop a new mission, goals and structure which sought strategic change, ie. innovation. During the change process staff within the Division developed a shared understanding of the plans and scope of services offered by the existing units which form the Division and of the rationale for the formation of the new Division. Together we created a mission statement and goals for the new Division, structural principles and a new structure based upon these principles. By January 1998 the Division had the top level structures and some of the internal structures in place. These continued to evolve over the remainder of 1998 and into early 1999.

The Division's Programs

The success of the Division revolves around the opportunities for strategic collaboration that are made available. Failure to maximize on collaborative efforts will diminish the likelihood of the Division achieving the benefits that were foreshadowed prior to its inception. Notwithstanding this, each of the Division's Programs has well-defined functions which are described below.

Client Services Program
The Client Services Program provides information and technology services to support both staff and students. These frontline services include the Help Desks, and converged IT Help Desks and library Reference Desks (locally referred to as Information Desks) in all of the libraries. Other functions include information resource and collection development services, faculty librarian support services, Information Technology (IT) desktop support, and management of the computer laboratories.

Information Resources Program
The Information Resources Program is responsible for the development and provision of scholarly information resources for staff and students. Among its services are acquisition of books and other information media, cataloguing and technical processing, and serials processing. This Program also manages interlibrary loans and document delivery, book circulation and Short Loans, archive collection and maintenance, and special collection and rare book services.

Information Systems Program
The Information Systems Program carries responsibility for the development, maintenance and integration of the University's corporate information systems, including student, human resource management and financial systems. Program staff also develop and maintain systems and interfaces to provide access to information contained in the corporate information systems.

IT Infrastructure Program
The IT Infrastructure Program manages the arteries conveying information and communication services across all campuses and outposts of the University. These functions include the large scale ones of telecommunications, core communications infrastructure development and maintenance, and hardware and operating systems management. The Program also provides audio-visual services in theatres and classrooms, and technical support to computer laboratories and library computers.

Learning and Development Program
The Learning and Development Program offers courses and consultancy in most areas of staff and organizational development, and has particular expertise in teaching and learning and

information technology. The Program houses PROBLARC, a specialist consultancy in Problem-Based Learning which operates worldwide.

Media Design, Production and Publications Program
This Program offers a wide diversity of specialized design and production services. These include graphic design and desktop publishing, video production and photography, and multimedia and CD-ROM productions. It also supports production and use of Powerpoint and other computer-based presentations, transparencies and slides, and Web-based media. Technical support is also given to conferences, and the Program has a strong expertise in medical media.

Web Development Team
The Web Development Team coordinates the University's web site, ranging from the production of promotional material to the delivery of student course material via the Internet. They provide technical advice, assistance with maintaining corporate standards on the web and provide leadership in the use of new Internet technologies.

Surveys and Evaluation Services
This unit offers survey design, statistical and analytical services for individual, departmental, institution-wide or external project needs. The unit manages the University's standard Student Evaluation of Subjects, and Student Evaluation of Teaching, the Composite Student Questionnaire and a wide range of other surveys on request. Staff can design and administer surveys, analyze data and produce reports. Advice and support on statistical software is also available.

Management of the Division

The Division is led by the Executive Director who convenes fortnightly Management Meetings which bring together the managers from each of the Programs mentioned above. This forum provides the basic structure upon which collaborative efforts are built. Members of the group share their Program's management plans and their own individual performance goals enabling a transparent and consistent approach to planning. The group analyses key strategic directions for the Division as well as assesses projects, both proposed and in progress.

In 1999 the Division was reviewed by an external panel of experts. Prior to this we were required to undertake a thorough internal review and many of the findings from this internal review were confirmed by the external panel. We found that that the Division had already moved a significant way toward achieving the benefits sought from its creation. Yet we recognized that we could achieve even more.

Achievements

1. An integrated approach to planning and management of the information, education and technology services

The Division has achieved an integrated approach to planning and management of the information, education and technology services within the context of the University's strategic directions. These plans are well integrated with, and underpin, the University's Strategic Plan. Integrated approaches to planning were exemplified through the IT Infrastructure Development Planning process and the flexible learning[3] project initiatives.

Planning the development of the University's IT infrastructure is an iterative process involving consultation with all Faculties and Divisions. This was strengthened by having greater involvement of information and education professionals from within the Division in the planning and development process. Through this a stronger emphasis was placed on the development and enhancement of infrastructure to support teaching and learning.

The University's strategic plan identified development of more flexible approaches to teaching and learning as a key priority. Appropriate experts from within the Division worked

closely with the University teaching committees to develop policies and plans to enhance the University's approach to flexible learning[xi].

2. Increased flexibility and ability to pursue new opportunities and to respond to changing university demands and strategic initiatives

The Division is in some senses working at the 'frontier' in that its services and operations must be continually reviewed as technology offers new opportunities. It is essential that the Division retain the flexibility to be innovative and adaptable. The Division seeks to respond to changes in the University's strategic directions and to grasp opportunities offered through changes in technology and through strategic partnerships. There is considerable collaboration between the Division and other organizational units within the University and with external agencies for mutual benefit.

Some examples which demonstrate this adaptability and flexibility include:

- Establishment of the learning consultants team
  To respond to the University's strategic directions with respect to flexible learning the Division sought to establish a team of learning consultants with expertise in curriculum and instructional design, media production skills, information and IT skills. This team, including both academic and general staff, provides consultancy services and project management for the University's flexible learning projects.
- Establishment of the web team
  The Division created a web team early in 1998 as a separate organizational unit. The Division was conscious of the need for a flexible and focused group which could embrace this new technology and work with other areas both within the Division and across the University, in exploiting the potential for the Web to position Newcastle in terms of teaching and learning practice, information resources and information and administrative systems.
- Staff development
  By locating the staff development function within the Division this ensures that staff and organizational development is informed by, and responsive to, teaching and learning developments and to information system and technology changes. In effect it places key decisions as to the critical content and focus of staff development within organizational proximity to those areas actually experiencing the changes in technology or practice, ensuring that staff development is linked to organizational change.
- Increased electronic access to scholarly information to meet teaching and learning needs in a flexible way
  To support flexible, problem based learning the Division has taken advantage of recent developments in electronic scholarly publishing to vastly expand the resource base of the Library's core collection of information resources and to provide the flexible and remote access to a quality research level information resource base. We have been able to plan such developments within the context of the University's overall systems development plans and capabilities.

3. Providing an integrated seamless approach to service, bringing together a range of relevant professionals on a project basis when required

The Division continues to offer a comprehensive range of services, with the ability to provide an integrated seamless approach to service, bringing together a range of relevant professionals on a project basis when required. The Division is far more than the 'sum of its parts'. It brings together staff to achieve a common purpose in a way which values the unique strengths of each of the professional groups within the Division. Through the use of cross-Divisional working parties, 'virtual team' meetings where staff servicing a particular client group meet to share ideas, State of the Division meetings and other strategies we are seeking to form new partnership which bring together our unique knowledge, skills and abilities to achieve a common purpose. We believe we can, and are, achieving far more than we could as independent units.

Perhaps the most notable example of our integrated approach to service is through our information desks and call center. The Division now manages integrated service points within the University libraries. The Libraries contain a number of computing labs and students have a 'one stop' information service point to assist them. By integrating these services we were able

to extend opening hours, improve the services available and reduce costs. The first service point to be integrated in this way, Huxley Library in 1997, saw almost a doubling of the number of students and staff entering the library when 1998 figures were compared with 1997.

In 1999 the Division implemented a call tracking software package. The software enables the tracking of all IT support call requests and provides a sophisticated mechanism for producing reports. This project was managed by our Service Point and Quality Assurance Team Leader, a librarian, and included IT professionals from the desktop support, labs management and infrastructure areas. While the project manager had only recently been exposed to IT management, the project was successfully completed on time.

As has been already noted, the Division manages a number of general access and training computer laboratories. The management of these laboratories is coordinated through the Labs Management Group, a diverse group from several Programs of the Division including Client Services (both IT and Library professionals), Infrastructure and Learning and Development. This group meets fortnightly and enables a consistent approach to computer laboratory management and support across the domain of the Division.

The opportunities for collaboration by bringing together a range of relevant professionals on a project basis has also contributed to the greater understanding that professional groups now have for each other. Several instances, in fact, have provided staff with the opportunity to develop new skills and to change professional directions. There are several examples in the Division where individuals have re-directed their careers on the basis of the opportunities that have been available.

4. Creating a planning and budgeting process to regularly re-assesses priorities and the 'bundle' of services we offer so we best meet the university's priorities, changes in demand and new service options

To realize the budget flexibility to re-deploy resources where most needed to achieve the University's goals the Division has embarked upon an iterative planning and budgeting process to support the University's strategic planning process. Each Program has a three to five year management plan which is revised annually (the University requires a five year budget plan). The plan is informed by the Division's strategic directions and the University's Strategic Plan. The Management Plans are used to develop staffing profiles, income targets and budgets for each Program on a rolling annual basis. Through negotiation the management team agrees on all the plans and budgets. This ensures that the Division continuously re-deploys resources, both human and financial, to best meet the University's strategic directions.

Another mechanism we employ is the use of service level agreements. We have witnessed an increase in demand across all areas of the Division's services, be it support for teaching and learning, library or computing services. The Division is seeking to meet changing priorities but must manage these within a fixed resource base. The Division has historically been funded to provide desktop support services to the University's administrative Divisions while the Faculties made their own arrangements. Several years ago the Division offered Faculties an opportunity to purchase these services from the Division at cost, believing this provided the University with the most cost effective service option. Faculties could choose to employ staff, contract out services or purchase services from the Division. We now have the majority of faculties in some form of SLA and we are planning to extend the agreement to cover all services offered by the Division to better ensure our resources are targeted to client needs.

5. Linking budgets to plans and finding efficiency gains to manage increased service demands, both for existing and for new services, within a declining budget

The Division has been able to create new services and manage increased service demands within a fixed Division budget by better linking of our plans and budgets. The range of services provided by the Division, and the terms and conditions under which these are provided, have evolved over time whilst the Division's operating grant has been essentially

static. As technology transforms the services we may offer, and the way in which we may offer them (for example self service loans and renewals), it is critical that the Division constantly reviews the bundle of services it provides and the terms and conditions under which these are provided. This is important given that the University must continually respond to external pressures, changes and opportunities within both the immediate and global environments. The primary mechanism has been through changing our staffing profile by changing the way in which the Division's funds are allocated to better support the University's strategic directions. Specifically we have sought to:

- find efficiencies wherever possible
- re-define services to enable us to shift resources as required
- make smart use of information technology
- exploit the synergies and opportunities provided by the formation of the Division.

To illustrate this the following summary shows some of the ways in which the Division has responded within its existing resource base:

- development and maintenance of a University web site (began in 1998)
- workshops in flexible learning techniques and technologies (began in 1998)
- flexible learning consultancy services (began in 1998)
- Student Evaluation of Subjects and Student Evaluation of Teaching (established as operating grant funded activity in 1999 though previously existing under special grant funding)
- implement library self service strategies to reduce our staff costs. For example self loans now account for 60% of all loans
- increase the hours of library opening under study hall conditions.

Given the size of the Division, the different cultures we were bringing together and the requirements to continue to do more with less, we have achieved a great deal. Within a few years we have integrated our planning processes to great advantage, resources are being deployed where they are most needed to achieve the University's strategic aims, and our staff now identify themselves with the Division whilst retaining a commitment to their particular service function and to their clients. Like any change processes it has meant that energy was taken in 'self reflection'. This has been a worthwhile investment but not without its challenges and its pitfalls.

Challenges and pitfalls

Client expectations – both internal (to your organizational unit) and external

With the formation of the new Division came raised client expectations. The Division promised new opportunities and it appeared to have 'lots of money' and 'lots of staff' when in fact there was no increase in resources and all existing services were to continue. If the Division is to operate strategically and capitalize on these new opportunities it must constantly review its service profiles within the context of the University's plans. But at the same time we must provide some certainty for our clients. Such an approach is not without tension. The Division brought together units which may be regarded as service units yet through its formation it has sought to provide leadership within the University in its areas of expertise. The Division structured itself so that it had the flexibility to evolve in line with the rapid changes and new opportunities offered by changes in technology. Yet at the same time the Division must provide client-focused services. This can create tensions between leadership and service which must be carefully managed. It is therefore critical that client and stakeholder expectations are effectively managed in an ongoing way.

It is also critical that you have agreed service levels and consistent service quality across all services and projects that you provide and to achieve this you must have agreed internal service levels so that your units within each share a common understanding of priorities and deadlines.

Client and stakeholder awareness of service demands/expectations

The Division is trying to ensure, through a range of strategies, that it uses its resources in the most effective way to meet University strategic directions. We have accommodated significant increases in service range and demand within a relatively static resource base

through improved work practices, reduction in duplication of effort, better use of technology and economies of scale. But what must be noted is that we are moving resources around within a defined 'envelope'. It is critical that we educate the university executive to the fact that you cannot continue indefinitely manage increased demand with static/reduced resources by re-deploying resources. The reality is that most areas within the Division are growth areas for student and staff demand and technology isn't necessarily replacing demand for traditional services (eg. book loans have increased over this period despite having greater numbers of electronic information services). At some point the University must make choices about its priorities.

University community understanding of how technology is changing the business of education and their readiness for change

You cannot assume the University community understands how technology is changing the business of education. The pace of change in all aspects of the University's business will not abate, with effects that question the traditional roles of universities and academics. The future consequences of continuing change can only be largely unknown. Whilst the Division is well aware of the drivers of change and constantly seeks to re-position itself within the changing technological environment, it is easy to forget that many within the University are not aware of these changes, and in many cases are not ready for, or resistant to, such change.

Internal complacency

With the formation of the Division staff within have been subject to significant change, not only in structures but, in many cases, in the design of their jobs and in the skills, knowledge and aptitudes required of them. You need to help them realize the 'restructure' is never finished. If we are to seek continuous improvement we must be prepared to keep making changes to improve what we do. You must work to develop a culture that welcomes change as an opportunity rather than a threat.

Also you must be prepared to continue to take risks and to sometimes make mistakes. Innovation can only occur when it is OK for staff to try new things and to know that if, as they sometimes do, these fail, you will not be persecuted for this.

You must be prepared to continue to model the organizational behavior you wish to see in other parts of your university even when you think you aren't making an impression. The Division is working hard to model effective organizational behavior, such as linking resources to plans and therefore making choices about priorities, building partnerships, managing staff performance and facilitating organizational learning. Even when you feel that others are not 'playing by the same rules' you should not compromise your approach but continue to model the behavior you would like to see in others.

Conclusion

While the Division has only existed for less than three years, it has realized significant achievements which reflect the benefits that were anticipated prior to its formation. Several of the challenges and pitfalls we have identified have led us to review some of our earlier strategies. These challenges and pitfalls, coupled with recommendations from our external review, have provided the Division with the impetus to seek to continually improve its services to ensure that we maximize our achievements and our value to the University community.

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[viii] Linklater, Bill; Little, Penny and O'Brien, Linda. An Integrated Approach to Information, Education and Technology Services: Final Report. December 1996.
http://www.newcastle.edu.au/services/iesd/formation.html

[ix] ibid

[x] Flexible learning is defined as flexibility of choice for learners, with that choice exercised with respect to movement between courses and institutions, content, mode of delivery, and entry and exit.

[xi] See for example the Issues paper prepared by Dr John Drinan, Deputy Director IESD, for the University's Teaching and Learning Committee at
http://www.newcastle.edu.au/flex/flex.htm

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EDUCAUSE *Information Resources Library*

Transforming Education Through Information Technologies

Abstract

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